Topic 7: Equilibrium (5 hours)

7.1 Dynamic equilibrium

1 hour

	Assessment statement	Obj	Teacher's notes
7.1.1	Outline the characteristics of chemical and physical systems in a state of equilibrium.	2	**Aim 7:** Spreadsheets and simulations can be used here.

7.2 The position of equilibrium

4 hours

	Assessment statement	Obj	Teacher's notes
7.2.1	Deduce the equilibrium constant expression (K_c) from the equation for a homogeneous reaction.	3	Consider gases, liquids and aqueous solutions.
7.2.2	Deduce the extent of a reaction from the magnitude of the equilibrium constant.	3	When $K_c >> 1$, the reaction goes almost to completion. When $K_c << 1$, the reaction hardly proceeds.
7.2.3	Apply Le Chatelier's principle to predict the qualitative effects of changes of temperature, pressure and concentration on the position of equilibrium and on the value of the equilibrium constant.	2	Students will not be required to state Le Chatelier's principle. **Aim 7:** Simulations are available that model the behaviour of equilibrium systems.
7.2.4	State and explain the effect of a catalyst on an equilibrium reaction.	3	
7.2.5	Apply the concepts of kinetics and equilibrium to industrial processes.	2	Suitable examples include the Haber and Contact processes. **Aim 8:** A case study of Fritz Haber could be included to debate the role of scientists in society.